measurement than the features mentioned. This would include mating reactions, rivalry and fighting, parental behavior toward young, and the like.

Moore finds definite evidence that masculinized females show exact male copulatory sex reactions and that feminized males show a tendency toward maternal behavior with the young. The interchanged sex hormones appear therefore to modify the psychic nature of one sex in the direction of the other.

CONTINUOUS VARIATION, AND ITS INHERITANCE IN PEROMYSCUS

Sumner (Amer. Nat. 1918, p. 177; 290; 439) finds evidence of continuous variation, subject to selection and to blending in inheritance, as well as evidence of other variations which are discontinuous and behave in breeding in accordance with Mendelian expectations in four local races of the wild deer-mouse *Peromyscus maniculatus*. These continuous variations relate both to pigment and to measurable structural features. These observations furnish cogent materials for further denial of the all-sufficiency of the extreme "Mendelian-mutation-pure-line" interpretation of evolution.

MOULT AND REGENERATION OF PELAGE IN DEER-MICE

Collins (Jour. Exp. Zool., Oct 1918) records observations on the normal moult of several varieties of deer-mice and on regeneration of the pelage after artificial removal.

The general body is destitute of hair and pigment at birth. The upper parts of the body begin, on the second day, to assume a bluish-black tinge and the hair begins to come thru the skin. The ventral white hair begins to show a day or two later. The characteristic juvenal pelage is attained in four or five weeks. This is made up of a thin coat of long and coarse overhair, filled between with a fine soft underfur. The hairs of the underfur are agouti,- slate colored at base, a narrow intermediate band of pale mouse gray near the tip, and a black tip. The overhairs lack the intermediate band,- not being agouti. The ventral surface is similar except that the tips of the hairs are white. The line between the deep gray of the back and the white of the belly is very sharp.

The transition to the post juvenal pelage begins at age of six weeks and requires about eight weeks for completion. It begins to appear at the throat and proceeds dorsally and anteriorly, then

posteriorly by a quite definite route and rate of extension The ventral moult is completed before the dorsal. This pelage is somewhat longer and coarser, with a distinct color effect dorsally varying from umber to sepia, and due to increased yellow pigment in the intermediate band of the hair.

The young mice were etherized and the hair plucked out over certain areas, without injuring the skin. Where the juvenal hair was removed it was replaced directly by the post-juvenal. The artificial removal of hair modified the normal sequence of appearance of post-juvenal pelage over the body quite definitely. Usually this modification was confined to the regions actually depilated; but not always. It sometimes influenced the succession at a little distance.

A precocious appearance of the post-juvenal pelage may be induced by removing the juvenile hair.

Restoration takes place in removed adult pelage, and occurs irrespective of seasons. It is restored somewhat more rapidly when hair is plucked out than when it is merely cut. Light appears to have no influence in developing the differences of color in dorsal and ventral surfaces.

EXPERIMENTS ON PROTECTIVE COLORATION

Young (Jour. Exp. Zool. May 1916) reports experiments in which crows, hawks, owls, chickens, prairie chickens, grackles, kingbirds and martins are used as preyers, and amphibians, small mammals and insects as prey. The work was done in cages, and varying backgrounds, which contrasted with and concealed the prey were used. He concludes; (1) that protective resemblance is effective in protecting motionless animals from attacks by caged birds; and (2) stillness is probably a more important factor than color in protecting animals from their foes.

COLOR DISCRIMINATION AND ASSOCIATION IN FISHES

White (Jour. Exp. Zool., Feb. 20, 1919) concludes from experiments on mudminnows and stickebacks that they were able to discriminate, in differing degrees, such colors as red and green, and that the discrimination is based on wave length and not upon intensity. Their power of discrimination is less than that of man. Effective associations between certain colors and behavior were shown by their learning to leap out of the water for food announced by various colors. In a similar way associated actions were shown